Explaining Variations in Housing Prices Via Changes in Unemployment Rates Across U.S. Metropolitan Areas using the S&P/Case-Shiller Home Price Index

I. Introduction
   A. <u>Brief overview:</u> This paper aims to understand the role of the S&P/Case-Shiller Home Price Index (HPI) in the housing market, the explanatory power of unemployment rates in understanding variations in housing prices, and its local characterization in cities across the United States.
   B. <u>Research objective:</u> How do changes in unemployment rates relate to variations in housing prices across different metropolitan areas in the United States, and are there geographic patterns to take into account?
   C. <u>Structure of research:</u> We will conduct a literature review to understand potential direct or indirect linkages between unemployment rate and the S&P/Case Shiller Home Price Index.

II. Literature Review
   A. <u>Paper Focus:</u> The main paper this research will build off of is Ray and Ray (2008), which looks at the stability of housing prices in the United States using the S&P/Case-Shiller Housing Price Index and predicts and summarizes volatility for different U.S. cities. My goal is to expand on their research and see if there is a relationship between the stability of housing prices and unemployment rates across U.S. cities.
   B. <u>Other papers:</u> Schindler (2011); Jiang, Phillips, Yu (2015); Saydometov, Sabherwal, Aroul (2019)
   C. <u>Literature themes:</u> Characterization of the HPI, the housing market, linkages between unemployment rate and the housing market, unemployment rate as an indicator of macroeconomic performance

III. Data Collection
   A. I will use S&P/Case-Shiller Housing Price Index data to measure the volatility of housing prices in at least 10 of the largest cities in the US, such as New York and Los Angeles, as well as FRED data on unemployment rates in these cities, which is available.

IV. Methodology
   A. As Ray and Ray did, I will use the ADF (GLS) unit root test in order to help measure volatility in housing prices across U.S. cities. I will then regress this measure of volatility on unemployment rate to see how stability in house prices changes with the unemployment rate.

V. Results and Discussion: I will offer data visualizations of the volatility of house prices over time for different U.S. cities as well as the unemployment rate over time, as well as data tables which show regression analyses of unemployment rate growth on house price volatility with controls.

VI. Robustness Checks

VII.   Conclusion:
      A. <u>Key Findings:</u> How does variation in a city's unemployment rate relate to variations in housing prices? Does this support evidence that unemployment rate can be a good indicator of explaining housing price volatility? Are there regional differences?

      B. <u>Implications:</u> What does this mean for mortgage lenders and U.S. development programs working to support single family homes?